Liebert®

ENVIRONMENTAL CONTROL

# TELE2

## InteleCool
## Auto-Changeover Controller

**User Manual**

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## 1.0 INTRODUCTION

The Liebert TELE2 remotely controls for two InteleCool units. Up to 20 system alarms can be stored with time and date stamp. All alarms are latching and must be manually cleared.

The most important control functions are Autochangeover and Autosequencing. Each unit can be assigned a Running or Standby status.

Autochangeover turns on the Standby unit if an alarm is detected. The Running unit (with alarm) will be turned off if that control option is selected. Each unit will return to its previous status when the alarm is manually cleared.

Autosequencing balances unit run-times by changing the Standby unit to Running (and the Running unit to Standby) at programmed time intervals.

Other control functions include Manual Override, Emergency Power Operation, Power Failure Mode, Password, and Programmable Delays. Refer to **4.0 - Glossary of Control Functions** for more details.

System outputs include Humidity Lockout Relay, Optional Control Lockout Relay, and Common Alarm. Communication ports are EIA-232 for terminal or printer, a modem port, and a proprietary EIA-422 port for communication to a Liebert SiteScan monitoring system.

The TELE2 can be operated locally from the built in control panel or remotely from an optional terminal (EIA-232 communication). This manual shows examples of several typical display screens during both local and remote operation.

## 2.0 START UP

To start up the TELE2:

1. Mount unit to wall
2. Connect cables
3. Set switches and jumpers on circuit boards as required for your application. Refer to instructions and illustrations in **5.0 - Installation**.
4. Make user programmable selections from the local control panel or from an optional remote terminal. Refer to **4.0 - Glossary of Control Functions** and **3.0 - Operation**.
5. Apply power to the unit. Note that the ON/OFF switch is inside the enclosure.

**Figure 1 Local Control Panel**

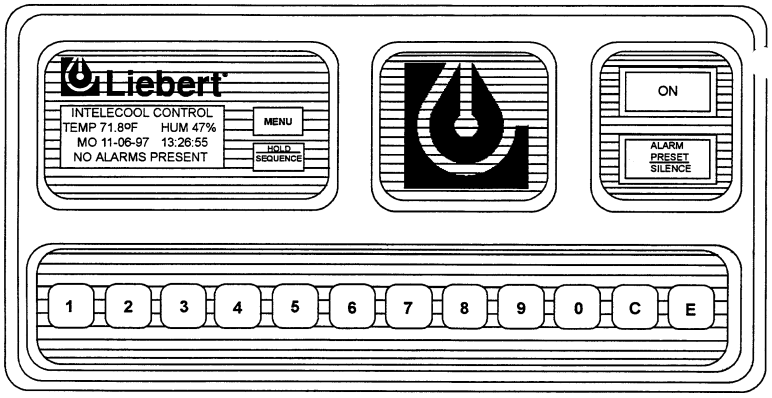
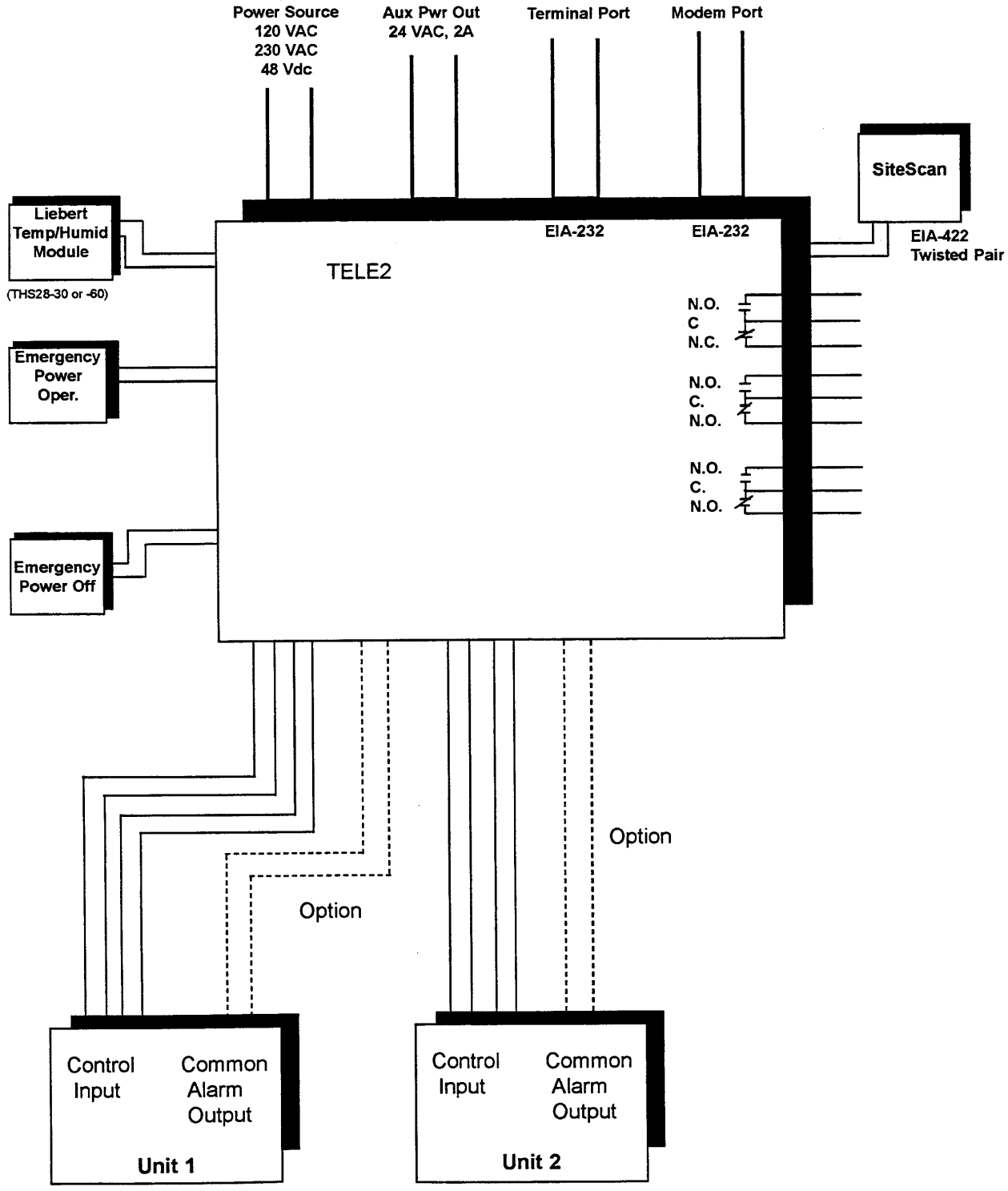


**Figure 2 Typical System Configuration**



# 3.0 OPERATION

This chapter describes how to use the TELE2.

## 3.1 Local

The following screens are displayed at the LCD display built into the TELE2 unit control panel. Refer to **4.0 - Glossary of Control Functions** for more details.

### 3.1.1 Sequencing Status Screens

With power ON, the following four status screens are displayed in sequence.

```
INTELECOOL CONTROL
TEMP 71.8°F  HUM 47%
MO 11-06-97  13:26:55
NO ALARMS PRESENT


UNIT 1 - STANDBY
UNIT 2 - RUNNING


AUTOSEQUENCING ON
DAY 01 OF 01 (12:00)


AUTO SEQUENCING ON
DAY 06 OF 15 <00:00>
```

(the last screen is seen only if AUTOSEQUENCE is ON.)

**NOTE:**
*These displays are only examples that show typical information. Actual data may vary depending on selections.*

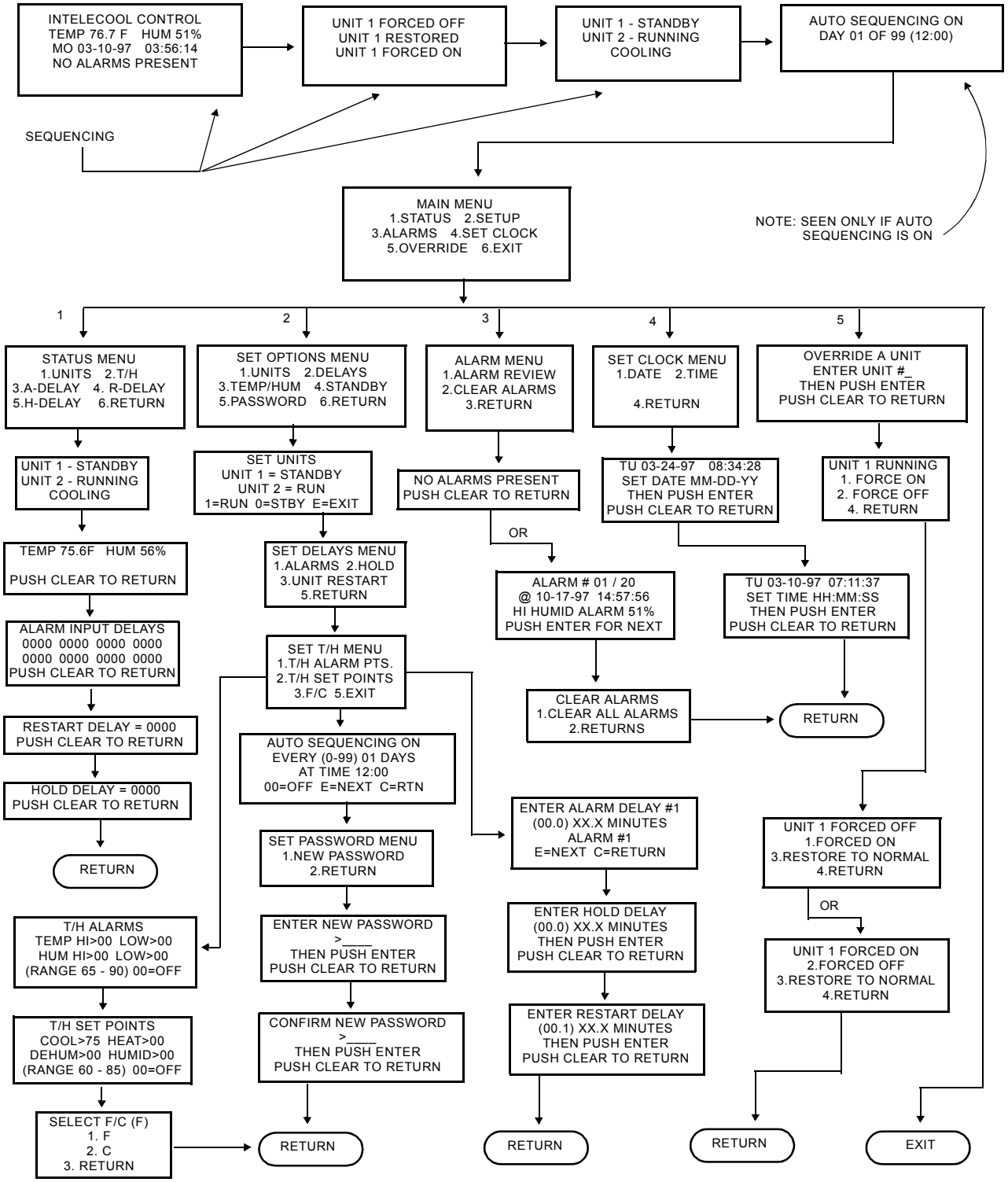
Each screen is automatically displayed for 3 seconds.

To control the display of the status screens, you can press the Hold/Sequence button to hold a screen and to manually sequence the display. Press C (Clear) to resume automatic sequencing. The system returns to the Sequencing Status Screens if no control keys have been pressed during a two minute period.

If alarms are present, the last line of the first screen displayed above reads “ALARMS PRESENT - XX.” Alarm screens are displayed next in the status sequence. Up to 20 alarms can be displayed, 5 screens of 4 alarms each. Alarms are stored in a First In First Out (FIFO) sequence.

Auto Sequencing can be selected from the Set Options Sub-menu.

**Figure 3 InteleCool Control Menu**



### 3.1.2 Password Screen

If the Password function is enabled, you must enter the valid password to access the Tele2 Main Menu. At the Enter Password screen, type the established password:

```
ENTER NEW PASSWORD
>_ _ _ _
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

Units are shipped from the factory with the Password function disabled. To enable the Password function, press the MENU button to display the Main Menu, then press 2 SETUP. Follow the instructions detailed in “5. PASSWORD” on page -7.

### 3.1.3 Main Menu

Press the Menu button to display the Main Menu:

```
MAIN MENU
1.STATUS  2.SETUP
3.ALARMS  4.SET CLOCK
5.OVERRIDE  6.EXIT
```

While in the Main Menu screen, press “9” to display TELE2 revision code and date. This function displays the version of your Tele2 software.

#### Status Sub-menu

From the Main Menu, press 1. STATUS to display the Status Sub-menu:

```
STATUS MENU
1.UNITS  2.T/H
3.A-DELAY  4.R-DELAY
5.H-DELAY  6.RETURN
```

**1. UNITS.** From the Status Sub-menu, press 1. UNITS to display the Unit Status menu:

```
UNIT 1 - STANDBY
UNIT 2 - RUNNING
COOLING
```

**2. T/H.** From the Status Sub-menu, press 2. T/H to display the Temperature/Humidity screen:

```
TEMP 71.8°F HUM 47%

PUSH CLEAR TO RETURN
```

**3. A-DELAY.** From the Status Sub-menu, press 3. A-DELAY to display the Alarm Delays screen:

```
ALARM INPUT DELAYS
0000 0000 0000 0000
0000 0000 0000 0000
PUSH CLEAR TO RETURN
```

The Alarm Delays screen indicates the time in seconds of an active delay on each unit. Active alarm delays count up while the condition is present and count down if the condition is cleared before the Alarm Delay time elapses.

**4. R-DELAY.** From the Status Sub-menu, press 4. R-DELAY to display the Restart Delays screen:

```
RESTART DELAY = 0000

PUSH CLEAR TO RETURN
```

The Restart Delays screen indicates the time in seconds of an active restart delay on each unit.

**5. H-DELAY.** From the Status Sub-menu, press 5. H-DELAY to display the Hold Delay screen:

```
HOLD DELAY = 0000

PUSH CLEAR TO RETURN
```

Hold Delay applies to the system rather than to each unit. Therefore, only one number is displayed. This display indicates the time in seconds of an active Hold Delay.

### Set Options Sub-menu

From the Main Menu, press 2. SETUP to display the Set Options Menu:

```
SET OPTIONS MENU
1.UNITS 2.DELAYS
3.TEMP/HUM 4.STANDBY
5.PASSWORD 6.RETURN
```

**1. UNITS.** From the Set Options Sub-menu, press 1. UNITS to display the Set Units menu:

```
SET UNITS
UNIT 1 = STANDBY
UNIT 2 = RUN
1 = RUN  0 = STBY  E = EXIT
```

**2. DELAYS.**

**NOTE:**
***4.0 - Glossary of Control Functions*** *includes a functional description of each delay.*

From the Set Options Sub-menu, press 2. DELAYS to display the Set Delays menu:

```
SET DELAYS MENU
1.ALARM  2.HOLD
3.UNIT RESTART
5.RETURN
```

From the Set Delays menu, press 1. ALARM to configure the Alarm Delay:

```
ENTER ALARM DELAY #1
(00.0) XX.X MINUTES
ALARM #1
E = NEXT C= RETURN
```

Enter the desired time for the alarm delay. The default is 10 minutes. Press E to accept the new delay, then press C to return to the Set Delays menu.

From the Set Delays menu, press 2. HOLD to configure the Hold Delay:

```
ENTER HOLD DELAY
(00.0) XX.X MINUTES
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

Enter the desired time for the hold delay. The default is 10 minutes. Press E to accept the new delay, then press C to return to the Set Delays menu.

From the Set Delays menu, press 3. UNIT RESTART to configure the restart delay:

```
ENTER RESTART DELAY
(00.1) XX.X MINUTES
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

Enter the desired time for the restart delay. The default is 00.1 minutes. Press Enter to accept the new delay, then press C to return to the Set Delays menu.

When you have configured the delays, from the Set Delays menu, press 5 to return to the Set Options Sub-menu.

**3. TEMP/HUM.** From the Set Options Sub-menu, press 3. TEMP/HUM to display the Set T/H menu:

```
SET T/H MENU
1.T/H ALARM POINTS
2.T/H SET POINTS
3.F/C  5.EXIT
```

1 and 2 inputs must be within the displayed range to be accepted. The Temp and Hum inputs are from a separate remote sensor, not from an operating unit.

From the Set T/H menu, press 1. T/H ALARM POINTS:

```
T/H ALARMS
TEMP HI>00 LOW>00
HUM HI>00 LOW>00
(RANGE 65-90) 00=OFF
```

Beginning with Temp Hi, enter the temperature and humidity alarm points. The third line displays the range for the alarm limit you are selecting. Press E to continue to the next point. When you have set all points, press C to return to the Set T/H menu.

From the T/H menu, press 2. TEMP. SETPOINTS:

```
T/H SETPOINTS
COOL>75  HEAT>00
DEHUM>00  HUMID>00
(RANGE 60-85) 00=OFF
```

**NOTE:**
*Because InteleCool units cannot provide humidification/dehumidification, these settings are not functional.*

Press E at the last parameter to return to the T/H menu.

From the T/H menu, press 3. F/C to configure degrees in Fahrenheit or Celsius:

```
SELECT F/C <F>
1.F
2.C
5.RETURN
```

**4. STANDBY.** From the Set Options Sub-menu, press 4. STANDBY to display the Autosequencing display. You can now configure an autosequencing schedule for your installation

```
AUTOSEQUENCING ON
EVERY (0-99) 01 DAYS
AT TIME 12:00
00 = OFF E = NEXT C = RTN
```

**5. PASSWORD.** From the Set Options Sub-menu, press 5. PASSWORD to display the Set Password menu:

```
SET PASSWORD MENU
1.NEW PASSWORD
5.RETURN
```

The Password function provides security to the Tele2 so that only authorized personnel can make Setup changes to the system.

Press 1. New Password to set a new four-digit password for the system, then follow the instruction on the screens:

```
ENTER NEW PASSWORD
>_ _ _ _
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

Enter “0000” to disable the Password function.

```
CONFIRM NEW PASSWORD
>_ _ _ _
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

When you have finished configuring the Password, Press E to return to the Main Menu

### 3.1.4 Alarm Sub-menu

From the Main Menu, press 3. ALARMS to display the Alarm Sub-menu:

```
ALARM MENU
1.ALARM REVIEW
2.CLEAR ALARMS
3.RETURN
```

Press 1 to review all alarms. The Tele2 can store up to 20 alarms in the alarm memory buffer in a First-In-First-Out (FIFO) sequence.

For each alarm, the review screen displays the alarm number, total number of alarms, date and time stamp, and the alarm message:

If there are no alarms, the screen reads “NO ALARMS PRESENT.”

```
NO ALARMS PRESENT

PUSH CLEAR TO RETURN
```

Press 2. to display the Clear Alarms screen, then press 1 again to clear all alarms:

```
CLEAR ALARMS
1.CLEAR ALL ALARMS
2.RETURN
```

### 3.1.5 Set Clock Sub-menu

From the Main Menu, press 4. SET CLOCK to display the Set Clock Sub-menu:

```
SET CLOCK MENU
1.DATE  2.TIME
4.RETURN
```

**1. DATE.** Press 1 to set the system date:

```
MO 07-15-96 15:12:34
SET DATE MM-DD-YY
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

The first line displays the current system day, date, and time. Enter the new date, then press E to return to the Set Clock Sub-menu.

**2. TIME.** Press 2 to set the system time:

```
MO 07-15-96 15:12:34
SET TIME HH:MM:SS
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

### 3.1.6 Override

From the Main Menu, press 5. OVERRIDE to display the Override a Unit screen:

```
OVERRIDE A UNIT
ENTER UNIT #
THEN PUSH ENTER
PUSH CLEAR TO RETURN
```

The Override function lets you manually force a unit ON or OFF, or to restore a forced unit to the normal control of the TELE2 system. The Override function acts immediately, ignoring the Hold Delay. An override message with time stamp is entered in the Alarm memory buffer. The Alarm light remains on while any unit is in an Override mode.

To override a unit, enter the one digit label assigned to the unit, then press Enter:

```
UNIT 01 FORCED ON
2.FORCED OFF
3.RESTORE TO NORMAL
4.RETURN
```

Select the desired override option.

When finished, press 4 to return to the Main Menu.

## 3.2 Terminal

A local terminal can be connected directly by an EIA-232 communication cable to the TELE2, or a remote terminal can be connected through modems. All of the status information and control functions available at the TELE2 local display are available from the terminal. An additional function available at the terminal is Set Modem.

The terminal also displays a status message with time and date stamp whenever a unit changes status (OFF or ON). These status messages will be printed if a printer (instead of a terminal) is connected to the EIA-232 port. Once each 24 hours (at midnight) the terminal checks its ability to communicate with the TELE2 and writes a Comm Check message.

A terminal connected to an active TELE2 displays alarm and status messages when they occur. The prompt on the screen then asks the operator to press <space>, <S>, or <A>. The following is a menu display of an Inactivity Timeout screen:

```
Menu Exited - Press <space> to Enter Menu,
<S> for Status, <A> for Alarms
```

<A> displays a list of alarms (up to 20).

<S> displays present status. Refer to **Status Screen** in Section 3.2.1.

<space> displays Main Menu after a password is entered.

```
LOG ON:
```

Is the prompt to enter a password. This prompt is also displayed when the system is accessed through a modem.

### 3.2.1 Main Menu

The Main Menu is displayed on a terminal as shown below:

```
INTELECOOL CONTROL TERMINAL MENU
1. Status
2. Setup Units/Delays Menu
3. Alarms Review
4. Alarms Clear
5. Set Clock
6. Override a Unit
7. Set Modem Options
8. Setup Temp/Humid Options Menu
9. Setup Standby Unit Options
A. Setup RCM8 Delays
B. Setup RCM8 Messages
D. Display SS Alarm Block
P. Set New Password
X. Exit
```

When a program selection is made from the terminal, the screen is displayed again with the new values.

Each Main Menu item has a corresponding screen that lets you configure the system parameters. Each screen is shown in the following sections.

#### Status Screen

The Status screen is displayed by pressing the <S> key (no password required) or by pressing the <1> key from the Main Menu.

```
INTELECOOL CONTROL V2.4 STATUS - 11-06-97 06:44:20
Temperature = 75.9°F   Humidity = 50%     Modem = OFF
UNIT 1 (R) = RUNNING COOLING
UNIT 2 (S) = STANDBY

SETPOINTS:
High Temperature Alarm   = 00   Low Temperature Alarm = 00
High Humidity Alarm      = 00   Low Humidity Alarm    = 00
High Temperature Setpt   = 75   Low Temperature Setpt = 00
High Humidity Setpt      = 00   Low Humidity Setpt    = 00
Hold Delay               = 10.0
Auto Restart Delay       = 00.1
Auto Sequencing          = OFF
OFF (0000) ALARM #1
OFF (0000) ALARM #2
OFF (0000) ALARM #3
OFF (0000) ALARM #4
OFF (0000) ALARM #5
OFF (0000) ALARM #6
OFF (0000) ALARM #7
OFF (0000) ALARM #8
ALARMS PRESENT - 20
```

Configure the parameters as desired.

### Setup Options

Press 2 from the Main Menu to display the Set Options menu. The following screen shows the terminal display that enables you to configure the Options menu items.

```
SET OPTIONS MENU
1.Set Unit Status
2.Set Hold Delay
3.Set Restart Delay
<ESC> TO EXIT
```

### Alarms Review and Alarms Clear

Press 3 from the Main Menu to access the Alarms Review and Alarms Clear screens. The TELE2 can store and display up to 20 Alarms with time and date stamp. All alarms are latching and must be cleared manually.

```
ALARMS REVIEW

03-29-92 05:32:11 UNIT 1 FORCED OFF
03-29-92 05:32:11 UNIT 1 RESTORED
03-29-92 09:16:37 UNIT 1 FORCED ON
03-29-92 09:16:39 UNIT 1 FORCED OFF
03-29-92 09:16:39 UNIT 1 FORCED ON
03-29-92 09:17:01 UNIT 1 FORCED OFF
03-29-92 09:17:02 UNIT 1 FORCED ON
03-29-92 09:17:06 UNIT 1 RESTORED
03-29-92 03:07:51 UNIT 1 FORCED ON
03-30-92 03:08:27 UNIT 1 FORCED OFF
03-30-92 03:08:31 UNIT 1 FORCED ON
03-30-92 03:08:33 UNIT 1 FORCED OFF
03-30-92 03:08:35 UNIT 1 FORCED ON
03-30-92 03:08:37 UNIT 1 FORCED OFF
03-30-92 03:08:38 UNIT 1 FORCED ON
03-30-92 03:08:39 UNIT 1 FORCED OFF
03-30-92 03:08:39 UNIT 1 RESTORED
03-30-92 03:08:41 UNIT 1 FORCED OFF
03-30-92 03:12:44 UNIT 1 FORCED ON
03-30-92 03:18:39 UNIT 1 RESTORED


ALARMS CLEAR

03-30-92 06:48:15 ALARMS CLEARED
```

### Set Clock

Press 4 from the Main Menu to display the Set Clock screen.

```
Current Date/Time is MON 03-30-92  06:48:44
Enter New Date/Time (MM-DD-YY HH:MM)
```

Set the new date and time as desired.

### Override A Unit

Press 5 from the Main Menu to display the Override a Unit screen. A unit can be Forced ON, Forced OFF, or Restored to automatic control.

```
** OVERRIDE A UNIT **
UNIT 1 = RUNNING
UNIT 2 = STANDBY
PRESS CH (1-8) KEY <ESC TO QUIT>
```

### Set Modem Options

Press 6 from the Main Menu to display the Set Modem Options screen.

```
** SET MODEM OPTIONS **
1. Phone Number    =
2. Site ID         =
3. Dial Prefix     = ATE1X4DT
4. Redial Interval (minutes)    = 01
5. Redial Tries (--- = Forever) = 03
6. Modem Messages Y/N = No
<ESC> TO EXIT
```

These parameters are unique to terminal operation.

The Site ID (up to 20 characters) is user selected to identify a specific facility. The Dial Prefix activates the modem and therefore must be compatible with the modem. The Dial Prefix is factory set. Do not change the Dial Prefix without consulting the modem user's manual. Modem messages describe modem activity such as No Answer, Line Busy, Redial in 3 Minutes, etc. Select Yes if you want these messages displayed at the terminal.

Make modem baud rate selection by setting DIP Switch 2, Position 1 inside the TELE2 enclosure. Refer to **Figure 7**. Set Switch 2, Position 2 to ON (down) if you are using a leased line.

The Modem must be Hayes or Hayes compatible. Switches inside the modem should remain factory set except the following which are user selectable.

Hang up on DTR on-off transition

- Model 1200: SW1 up and SW10 down
- Model 2400: &D3

Track status of carrier detect

- Model 1200: SW6 up
- Model 2400: &C1

Enable Auto-answer

- Model 1200: SW5 up
- Model 2400: S0=1

### Setup Temp/Humid Options

Press 8 from the Main Menu to display the Set Modem Options screen.

```
** SET TEMP/HUMIDITY OPTIONS **
1. High Temperature Alarm  = 00
2. Low Temperature Alarm   = 00
3. High Humidity Alarm     = 00
4. Low Humidity Alarm      = 00
5. High Temperature Setpt  = 75
6. Low Temperature Setpt   = 00
7. High Humidity Setpt     = 00
8. High Humidity Setpt     = 00
9. Temp Display F/C        = F
<ESC> TO EXIT
```

The system inputs come from a remote temp/hum sensor. Each alarm can be disabled by entering 00 as the alarm trip-point. Temperature Staging turns on a Standby unit when the room temperature exceeds the Normal Temperature by the number of degrees entered in Sensitivity. Also note that temperature can be displayed in either degrees F or degrees C.

### Setup Standby Unit Options

Press 9 from the Main Menu to display the Set Standby Unit Options screen:

```
** SET STANDBY UNIT OPTIONS **
1. Auto Sequencing  = OFF
2. Day Interval     = 00
4. At Time          = 12:00
<ESC> TO EXIT
```

Two options are available for controlling Standby units (in addition to Autochangeover). The Tele2 will operate with both of these options turned OFF, or with one of them turned ON. Select the option (or neither) required for your installation. The interval (in days) and time of day are user selected.

Auto Sequencing balances the run time of units by changing the status of a Standby unit to Running, and changing the Running unit to Standby.

Standby Testing tests the operating condition of a Standby unit by turning it ON for a period of time equal to the Hold Delay plus the Alarm Delay. The Running unit is turned OFF during this period if it is programmed to shutdown on an alarm.

### Display SS Alarm Block

This display is useful to a Liebert Customer Engineer for system diagnostics.

### Set New Password

Press P from the Main Menu to configure a password for terminal operation.

```
Enter New Password (4 chars) <ESC to quit>
```

This Password can be different from the one used locally at the Tele2.

Enter “TERM” to disable the Password function from the terminal. A Password is always required when accessing the TELE2 system through a modem.

# 4.0 GLOSSARY OF CONTROL FUNCTIONS

The following terms are used to describe the control and operation of the Liebert TELE2. For each term, both the operator actions and the system performance are defined. Refer to this section if necessary while setting up your system or to answer any questions about how the system operates.

## 4.1 Alarms

For each alarm condition or warning condition, the TELE2 locally annunciates the condition, locally displays the message, provides a time and date stamp, stores up to 20 messages in memory, and displays the message at a remote terminal. Alarms are produced for normal alarm conditions such as Common Alarm inputs and Temp/Hum alarms. Warnings are produced for conditions such as Manual Override.

### 4.1.1 List of Alarms

- UNIT XX COMMON ALARM – Alarm
- EMERGENCY POWER OFF – Alarm
- EMERGENCY POWER OP. – Alarm
- MANUAL OVERRIDE – Alarm
- HIGH TEMP ALARM – Alarm
- LOW TEMP ALARM – Alarm
- HIGH HUM ALARM – Alarm
- LOW HUM ALARM – Alarm
- STBY NOT AVAILABLE – Alarm
- STBY UNIT FAILED – Alarm
- UNIT XX FORCED ON – Warning (no audible alarm)
- UNIT XX FORCED OFF – Warning (no audible alarm)
- UNIT XX RESTORED – Warning (no audible alarm)

## 4.2 Alarm Annunciation

The TELE2 provides the following alarm annunciation mechanisms:

- Audible indication (horn).
- A lighted 'Alarms Present' front panel indicator.
- Activation of the Common Alarm relay output.
- Display of alarm messages on the front panel LCD.

Warnings activate the 'Alarms Present' indicator and a message on the LCD, but no audible alarm or Common Alarm.

When an alarm occurs the LCD immediately displays a message (unless an Override screen is being displayed). Pushing the Alarms Present/Silence pushbutton acknowledges the alarm and silences the alarm horn. The alarm message is displayed until the alarm is acknowledged (silenced). After the alarm is silenced, normal status display scanning resumes.

Any alarms present are displayed during scanning of normal display pages. If more than 4 alarms are present additional pages of alarms are created as necessary. Up to 20 alarms are stored in a First-In-First-Out sequence.

## 4.3 Alarm Communications

- EIA-232 Terminal Port—Transmits Alarm with time stamp.
- EIA-232 Modem Port—Dials out alarm.
  Both EIA-232 ports are compatible with SS-AMS (SiteScan Alarm Management System).
- EIA-422 (proprietary) to SiteScan monitoring system.

## 4.4 Alarm Delay

Delay before an alarm is annunciated (false alarm delay). This delay begins on the occurrence of an alarm condition in a unit. If the alarm condition has not corrected itself by the end of the delay period, the alarm is annunciated and an autochangeover to the standby unit Occurs. If a unit is programmed to shutdown on an alarm, the unit shuts down when the alarm is annunciated. The Alarm Delay timer counts both up and down and an active Alarm Delay timer can be monitored at the display. The Alarm Delay is user selectable from the display. Range - 0.1 to 60 minutes, in increments of 0.1 minute (6 sec).

## 4.5 Autochangeover

If an alarm Occurs in a Running unit, the Standby unit is started. The Running unit in alarm is stopped if it is programmed to shut down, and the Standby unit is started. The Standby unit changes status to become the Running unit and remains running until the Alarm is manually cleared. Messages are written to the terminal to record the status changes. Status screens show new unit status at the local display. After a changeover, the newly started unit may briefly have a High Temp or other alarm. A user selectable Hold Delay begins when any unit is turned ON. During the Hold Delay no alarms are annunciated from the started unit or any unit in the system.

If the Standby unit has an alarm, the Running unit is restarted if DIP Switch 1, Position 8 is ON. Also, whenever the alarm is cleared in a Running unit, the unit is turned on and the Standby unit is turned off.

## 4.6 Autosequencing

An optional operating mode in which the Standby unit is periodically sequenced to RUN to balance operating time among all units. Select Autosequencing ON or OFF from the display.

When Autosequencing is ON, periodically the Standby and Running units are changed to balance unit running time. This interval (in days) and time of day are user selected from the display. When this changeover Occurs, the Standby unit becomes a running unit, and the Running unit that has been running the longest becomes the Standby Unit. Messages are written to the terminal to record the status changes. Status screens show new unit status at the local display.

After a changeover, the newly started unit may briefly have a High Temp or other alarm. A user selectable Hold Delay begins when any unit is turned ON. During the Hold Delay no alarms are annunciated from the started unit or any unit in the system. If the newly started unit has an alarm at the end of this delay (plus the Alarm Delay), this unit is shut down, and the previously running unit is restarted. An alarm is indicated on the LCD and the alarm is annunciated.

If a zone includes more than 1 Standby unit, the same actions occur. At the end of each Interval, one unit is started and one is stopped.

## 4.7 C key

The Clear key <C> at the local control panel serves two functions:

- Remove incorrectly entered data.
- Return to the previous display page.

## 4.8 Clear Alarms

All alarms are latching and must be manually cleared from the control panel or from a terminal. Be sure to review alarms before clearing them because recent alarm history is your best indication of system performance. When alarms are cleared, units that are running because of an Autochangeover will change back to their programmed status.

## 4.9 Common Alarm—Inputs

The standard InteleCool unit does not have a Common Alarm. Units can be factory customized with a common alarm. The Tele2 receives the Common Alarm from each unit as a control input.

These alarms are annunciated only if the programmed Delays (Hold and/or Alarm) are exceeded. A Common Alarm from a Running unit causes a Standby unit to be turned ON, and turns OFF the Running unit if shutdown is selected. A Common Alarm from a Standby unit causes the unit to be unavailable.

## 4.10 Common Alarm—Output

A Form C contact labeled Common Alarm is available for customer use. This relay is energized during the following conditions:

- A Common Alarm input from one of the units
- A Temp/Hum Alarm
- Manual Override ALL ON internal switch
- Emergency Power Operation mode
- Emergency Power OFF

The Common Alarm is de-energized by the Silence pushbutton if DIP switch 1, Position 7 is ON.

## 4.11 Control Lockout

A Form C contact labeled (optional) Control Lockout is available for customer use. This relay is energized during the following conditions:

- Manual Override internal switch (all units on)
- Emergency Power Operation mode

## 4.12 Delay

Refer to **4.4 - Alarm Delay**, **4.18 - Hold Delay**, and **4.28 - Restart Delay**.

## 4.13 E key

The Enter key <E> at the local control panel serves two functions:

- Causes data entered in setup display pages to be stored in the TELE2 permanent memory.
- Causes selection of next unit on multi-unit displays.

## 4.14 Emergency Power OFF (EPO)

EPO can be initiated from a remote switch wired to the TELE2. This user input causes all units to be turned OFF immediately. TELE2 control power is maintained. This Normally Closed contact must be Open for 0.5 seconds for the input signal to be detected.

After the input signal is removed (closed), the alarm must be manually cleared. Then all units programmed to be Running are started sequentially, separated by the Restart Delay.

## 4.15 Emergency Power Operation

This user input activates a separate mode for operating on an emergency power source (a UPS system or standby generator) which may have limited capacity. Only units selected to be ON during this mode are running. Select ON units for this mode from the display. Autochangeover, Autosequencing, and Standby Testing are inactive during this mode to reduce power load. Units that are OFF during this mode will remain OFF until normal mode is resumed. This mode also energizes both lockout relays, Humidity and (Optional) Control.

## 4.16 Force ON

To manually turn a unit ON from the display. Refer to **4.25 - Override**.

## 4.17 Force OFF

To manually turn a unit OFF from the display. Refer to **4.25 - Override**.

## 4.18 Hold Delay

Delay after turn ON of a Standby unit to allow the newly started unit to gain control. During the Hold Delay alarms from this unit and all other units are ignored. This delay begins when any changeover Occurs in Autosequence mode. An active Hold Delay can be monitored at the display. At the end of the Hold Delay, the Alarm Delay time begins. The Hold Delay is user selectable from the display.

Range—0.1 to 60 minutes, selectable in increments of 0.1 minute (6 seconds).

## 4.19 Humidity Alarms

Humidity alarms are caused when the humidity detected by the remote sensor exceeds the programmed High or Low trip-point. Trip-points are selected in 1% RH increments from the display. Entering 00 disables an alarm. A Humidity Alarm activates the Common Alarm output.

High Range—30% - 80% RH.

Low Range—20% - 70% RH.

## 4.20 Inactive Unit

An inactive unit is one that is not programmed to the Tele2 system. This appears in an error message if you try to Override a unit that the system does not recognize.

## 4.21 Interval

The Interval is the time period (in days) used to program the Autosequencing function. The interval is user selected from the display. Range – 0 to 99 days.

## 4.22 Manual Override

A switch (Switch 45) located inside the Tele2 enclosure turns all units ON. This action also annunciates an alarm, energizes the Common Alarm output relay, and energizes the Control Lockout relay. To return to normal operation, turn this switch off and clear the alarm. Refer to **4.25 - Override** for manual operations from the display.

## 4.23 Modem

The TELE2 includes an EIA-232 modem port to provide remote display of alarms. This same port also allows system monitoring and programming from a remotely located terminal. Operation from a remote terminal requires a Password after the “LOG ON:” prompt. If a remote terminal is active, alarms are displayed at the terminal instead of being dialed out. The modem selections such as phone number, redial interval, etc., are made from a local or remote terminal. Modem baud rate is selected using Switch 2, Position 1, inside the TELE2 enclosure.

## 4.24 Normal Temperature

Refer to **4.35 - Temperature Setpoints**.

## 4.25 Override

The TELE2 allows manual control of units from the display and also from switches inside the enclosure. To manually turn all units ON refer to **4.22 - Manual Override**. To manually select units to be ON during a control power failure refer to **4.27 - Power Failure Mode**.

Manual Override control from the display includes Force ON, Force OFF, and Restore to normal operation. If any unit is Forced ON or OFF a warning message is recorded and the Alarm Present

light is illuminated, but the audible alarm (horn) is not sounded. Changes of status messages are displayed at a local terminal if one is connected.

While an Override screen is displayed, alarm messages are stored but not displayed.

### 4.25.1 Force ON of any unit

Selected from the Override screen at the display. This action causes the selected unit to be turned ON and held ON until further action is taken. The unit remains ON until it is Forced OFF or Restored to normal.

### 4.25.2 Force OFF of any unit

Selected from the Override screen at the display. This action causes the selected unit to be turned OFF and held OFF until further action is taken. The unit remains OFF until it is Forced ON or Restored to normal.

### 4.25.3 Restore to normal

Selected from the Override screen at the display. This action returns the selected unit to the programmed control of the TELE2. The unit returns to its operating status (Running or Standby) as defined in Unit/Zone Setup.

## 4.26 Password

A four digit number used to limit access to setup information and clearing of alarms. A Password (if active) is required for entry to the Main Menu. Assign a new Password from the display. A Password of “0000” disables the Password function at the local display: “TERM” disables the password at a local terminal. The Password is always required for a remote terminal (through a modem).

## 4.27 Power Failure Mode

During a failure of power to the TELE2, units can be programmed to be ON by manually setting jumpers inside the enclosure. This assumes that power will be available to the units. When power is restored to the TELE2, all units programmed to be Running during normal operation are sequentially started, separated by the Restart Delay.

Compare this mode with **4.15 - Emergency Power Operation** which is selectable from the display and applies to power being available from a standby source.

## 4.28 Restart Delay

The length of time between a request to turn ON a unit and when the unit is actually turned ON. Also the length of time between the start of each successive unit after power is applied or restored. This delay prevents an excessive inrush current demand on the power source. Restart Delay is typically very short and is user selectable from the display. Range—0.1 to 60 minutes, in increments of 0.1 minute (6 seconds).

## 4.29 Restore

To return a Forced ON or Forced OFF unit to normal control. Refer to **4.25 - Override**.

## 4.30 Running Units

The units selected to be ON during an operating mode. Select Running units from the display. Units not selected for Running status are given Standby status. Running units can be turned OFF by Autochangeover or Autosequencing.

## 4.31 Site ID

The user assigned identification of this facility (up to 20 characters). The Site ID is included in alarm messages dialed out by the modem. Assign the Site ID from the terminal.

## 4.32 SiteScan

A Liebert site monitoring system. The TELE2 sends information to SiteScan if a system is connected to the EIA-422 port.

**NOTE**
*SiteScan reads these as bit string (on or off). SiteScan would need to be "set-up" to translate these.*

### 4.32.1 SiteScan Bit String Reference Chart

SiteScan "SWITCH" for alarms and status are provided as follows:

[1] = Alarm Input #1
[2] = Alarm Input #2
[3[ = Alarm Input #3
[4] = Alarm Input #4
[5] = Alarm Input #5
[6] = Alarm Input #6
[7] = Alarm Input #7
[8] = Alarm Input #8
[9] = Remote Stop
[10] = EPO
[11] = High temp alarm
[12] = Low temp alarm
[13] = High humid alarm
[14] = Low humid alarm
[15] = Manual override switch
[16] = n/a
[17] = n/a
[18] = n/a
[19] = n/a
[20] = n/a
[21] = Unit 1 Running
[22] = Unit 2 Running
[23] = n/a
[24] = Auto sequencing units
[25] = Unit 1 cooling
[26] = Unit 1 heating
[27] = Unit 1 humidifying
[28] = Unit 1 dehumidifying
[29] = Unit 2 cooling
[30] = Unit 2 heating
[31] = Unit 2 humidifying
[32] = Unit 2 dehumidifying

## 4.33 Standby Unit

The unit selected to be OFF during an operating mode. Select Standby unit from the display. The unit not selected for Standby status is given Running status. The Standby unit can be turned ON by Autochangeover or Autosequencing.

## 4.34 Temperature Alarms

Temperature alarms are caused when the temperature detected by the remote sensor exceeds the programmed High or Low trip-point. Trip-points are selected in 1 degree increments from the display. Entering 00 disables an alarm. A Temperature Alarm activates the Common Alarm output.

- High Range—65°F-90°F (18°C-32°C).
- Low Range—50°F-80°F (10°C-26°C).

## 4.35 Temperature Setpoints

The TELE2 can be programmed (based on selections made for setpoints, alarms, and delays) to use a Standby unit along with a Running unit for increased capacity. This mode is the best way to control room temperature after recovering from a power failure.

**NOTE**
*A remote T/H sensor is required.*

Temperature to be maintained is selected from the display.

- Cooling range: 60°F to 85°F (15°C to 29°C) in 1 degree increments.
- Heating Range: 55°F to 85°F (12°C to 29°C), in 1 degree increments.

## 4.36 Terminal

A local terminal can be connected directly to the TELE2 or a remote terminal can be connected through modems. Two EIA-232 ports are available at the enclosure. All of the status information and control functions available at the TELE2 local display are available from the terminal. An additional function available at the terminal is Set Modem. The terminal also displays a status message with time and date stamp whenever a unit changes status (OFF or ON). The terminal baud rate is selected by using Switch 1, Positions 1 and 2. See drawings for details.

## 4.37 Units

Each InteleCool connected to the TELE2 is called a Unit. All of these selections are made from the display (for 1 to 2 units). The TELE2 monitors Unit Common Alarms and turns Units ON or OFF from the automatic control program or from manual inputs.

# 5.0 INSTALLATION

Select a location for the TELE2 that is convenient for both operation and cable routing. If the application at your installation is critical, the location should also provide limited access to the controller.

The TELE2 enclosure is surface mounted using four 1/4 in. bolts. The power cord is factory wired. Note that the proper power source must be selected for the unit when ordered. This is not a field selectable option. Two EIA-232 ports are available at the bottom of the enclosure. All other customer cables enter through knockouts at the bottom of the enclosure.

The TELE2 includes a lithium backup battery for control memory. The battery is disconnected from the system for storage and shipment. Set DIP switch 2, position 8 to ON to connect the battery.

Call Liebert Environmental Support at 1-800-543-2778 if you require any assistance for the installation or operation of your TELE2 Autochangeover controller.

**NOTE**

*Refer to **Figure 2** at the beginning of this manual for a typical system configuration. Refer to the following drawings (including notes) for details of wire terminations and switch settings for inputs and outputs used at your installation.*

**Figure 4 TELE2 Dimensional Enclosure Diagram**

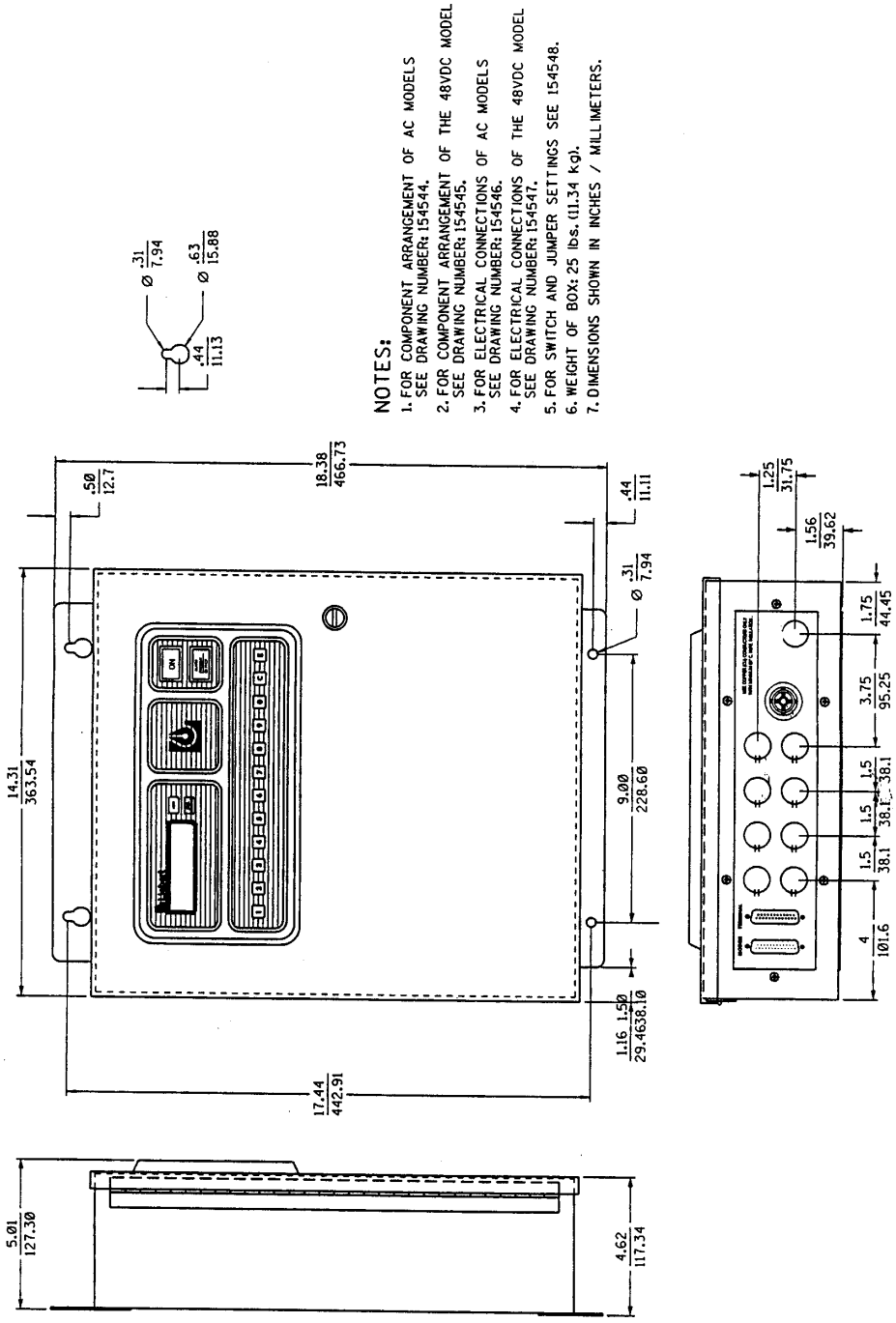


**Figure 5 TELE2 Component Arrangement (AC Models)**

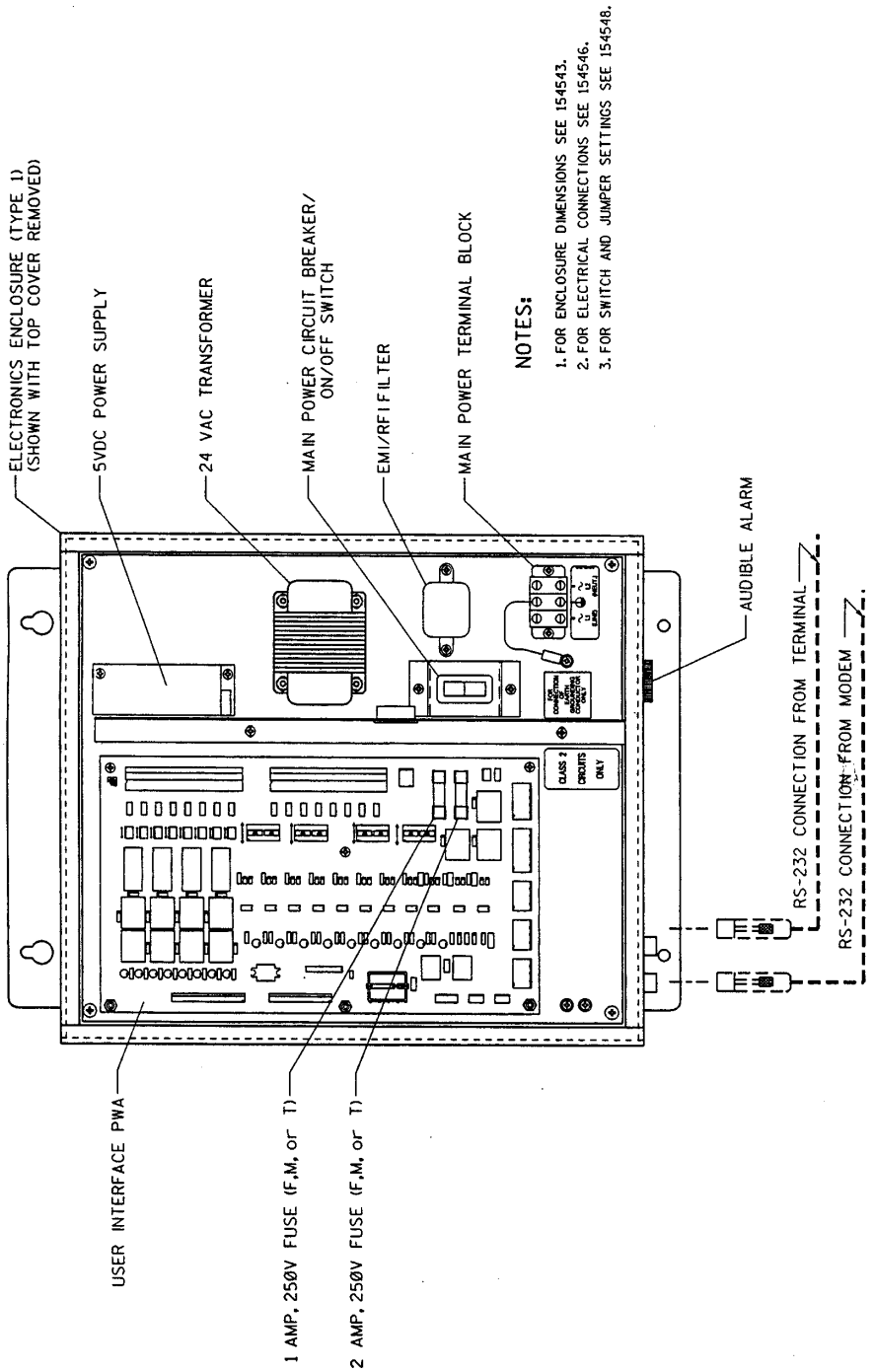

ELECTRONICS ENCLOSURE (TYPE 1)
(SHOWN WITH TOP COVER REMOVED)
5VDC POWER SUPPLY
24 VAC TRANSFORMER
MAIN POWER CIRCUIT BREAKER/
ON/OFF SWITCH
EMI/RFI FILTER
MAIN POWER TERMINAL BLOCK
NOTES:
1. FOR ENCLOSURE DIMENSIONS SEE 154543.
2. FOR ELECTRICAL CONNECTIONS SEE 154546.
3. FOR SWITCH AND JUMPER SETTINGS SEE 154548.
AUDIBLE ALARM
RS-232 CONNECTION FROM TERMINAL
RS-232 CONNECTION FROM MODEM
USER INTERFACE PWA
1 AMP, 250V FUSE (F,M, or T)
2 AMP, 250V FUSE (F,M, or T)

**Figure 6 TELE2 Component Arrangement (48 VDC Model)**

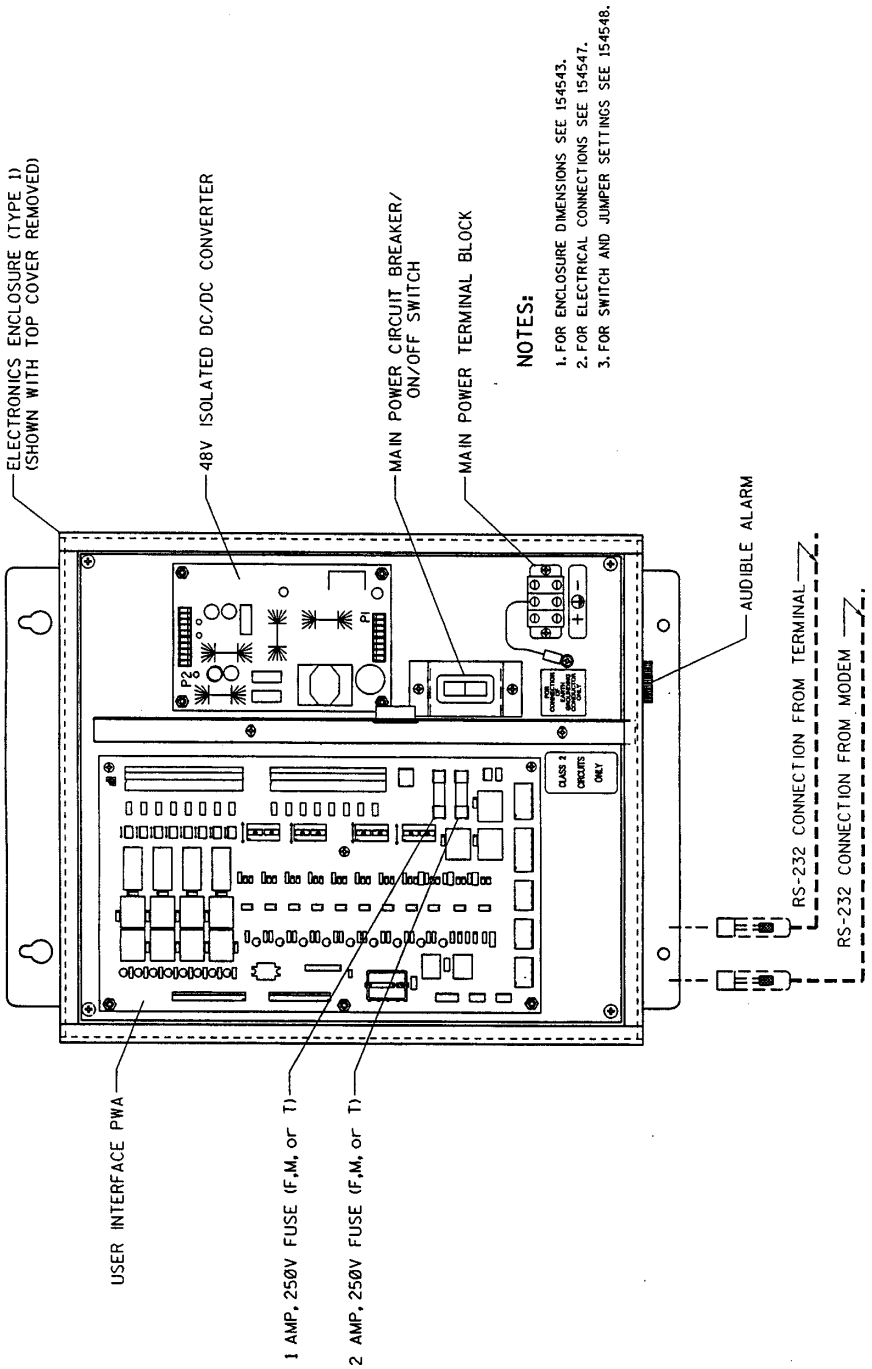

ELECTRONICS ENCLOSURE (TYPE 1)
(SHOWN WITH TOP COVER REMOVED)
48V ISOLATED DC/DC CONVERTER
MAIN POWER CIRCUIT BREAKER/
ON/OFF SWITCH
MAIN POWER TERMINAL BLOCK
NOTES:
1. FOR ENCLOSURE DIMENSIONS SEE 154543.
2. FOR ELECTRICAL CONNECTIONS SEE 154547.
3. FOR SWITCH AND JUMPER SETTINGS SEE 154548.
AUDIBLE ALARM
RS-232 CONNECTION FROM TERMINAL
RS-232 CONNECTION FROM MODEM
USER INTERFACE PWA
1 AMP, 250V FUSE (F,M, or T)
2 AMP, 250V FUSE (F,M, or T)

**Figure 7 TELE2 Connection Diagram (AC Models)**

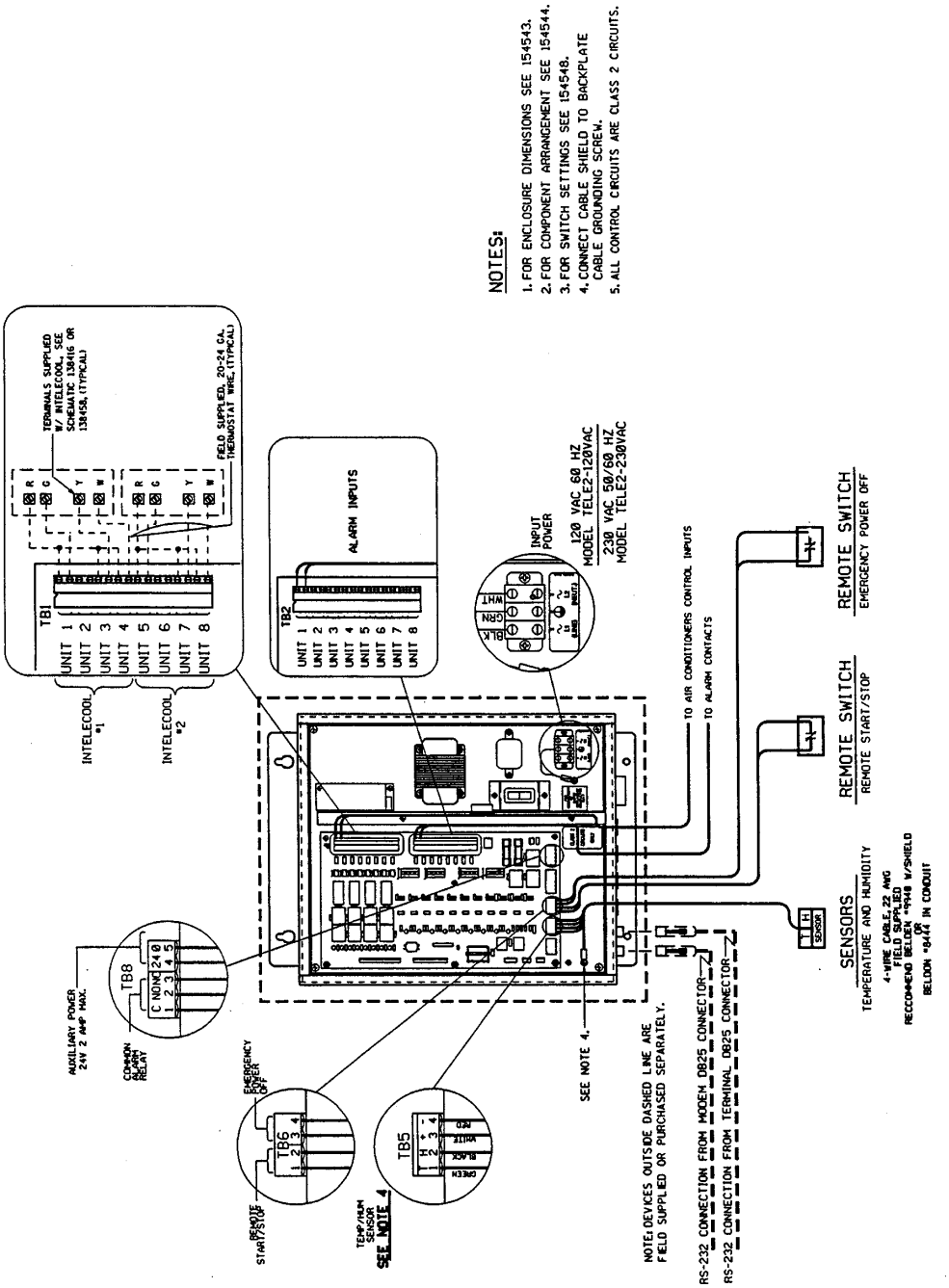


**Figure 8 TELE2 Connection Diagram (48 VDC Model)**

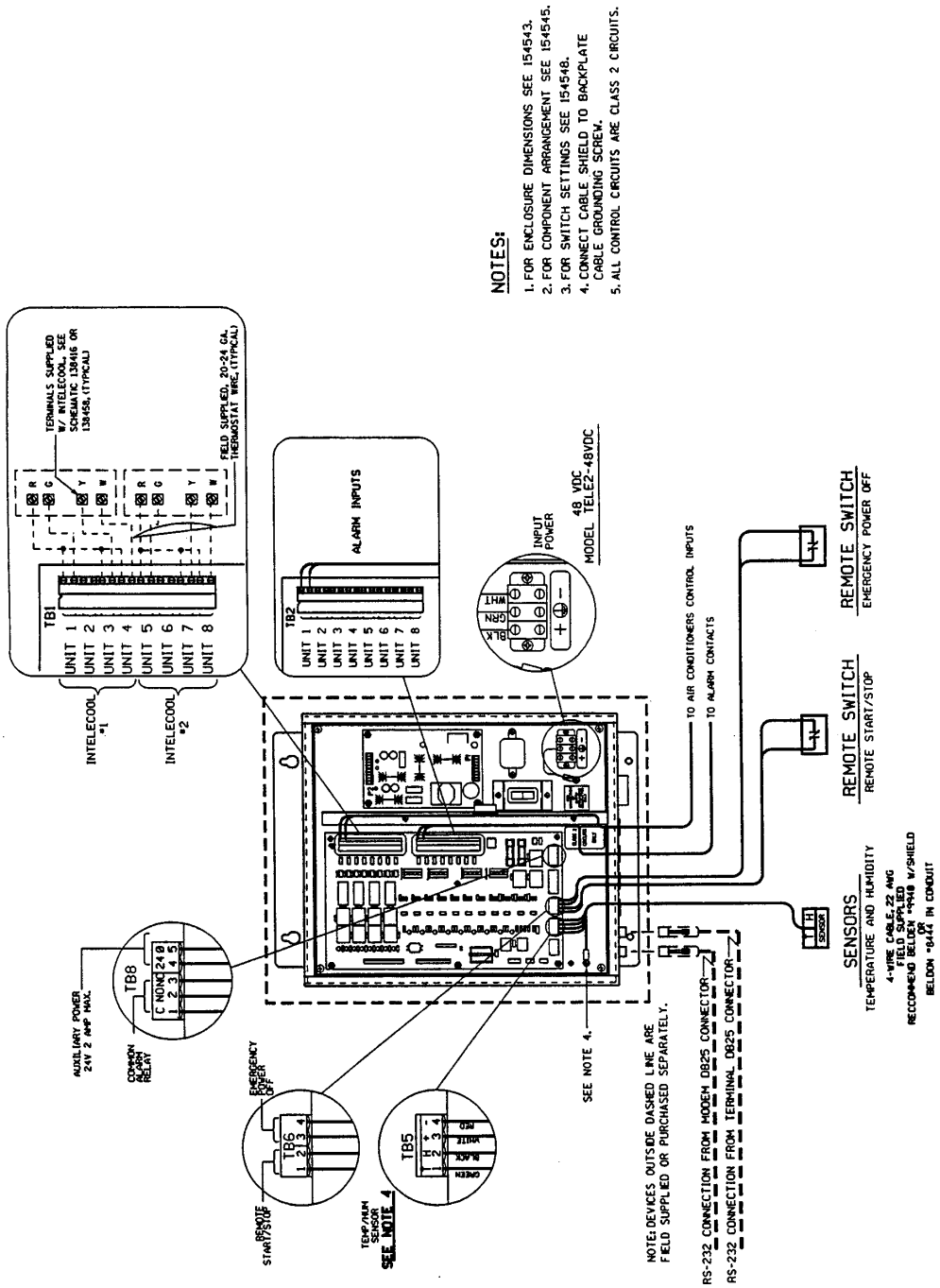
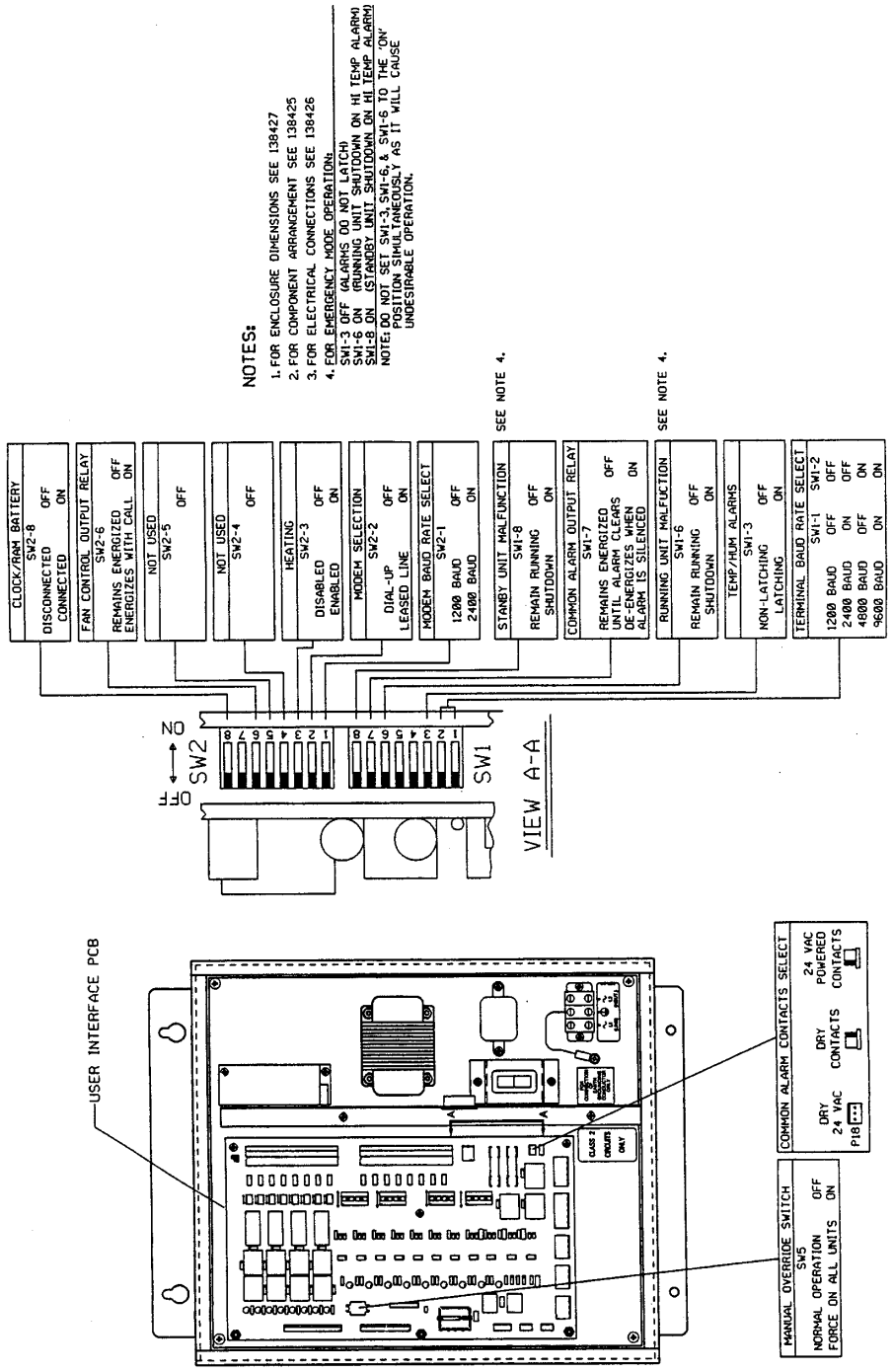


**Figure 9 TELE2 Switch and Jumper Settings (All Models)**



# TELE2

**InteleCool Auto-Changeover Controller**

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